

CLAIMS

1. A semiconductor device provided with a monitor transistor for detecting electric current flowing in a driver transistor mounted on a semiconductor chip, the semiconductor device comprising:

a plurality of transistors provided in the monitor transistor and connected in parallel;

wherein the plural transistors are disposed at a periphery of an area of the semiconductor chip on which the driver transistor is mounted.

2. A semiconductor device provided with a monitor transistor for detecting electric current flowing in a driver transistor mounted on a semiconductor chip, the semiconductor device comprising:

a plurality of transistors provided in the monitor transistor and connected in parallel;

wherein the plural transistors are disposed within an area of the semiconductor chip on which the driver transistor is mounted.

3. The semiconductor device as claimed in claim 1, wherein the plural transistors are disposed on the semiconductor chip at equal intervals.

4. The semiconductor device as claimed in claim 1, wherein the driver transistor and the monitor transistor are MOS transistors.

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5. A voltage regulator provided with a constant voltage circuit part including a driver transistor mounted on a semiconductor chip and an output current detection circuit part including a monitor transistor for detecting electric current
10 flowing in the driver transistor, the voltage regulator comprising:

a plurality of transistors provided in the monitor transistor and connected in parallel;

wherein the plural transistors are disposed at a
15 periphery of an area of the semiconductor chip on which the driver transistor is mounted.

6. A voltage regulator provided with a constant voltage circuit part including a driver transistor mounted on a
20 semiconductor chip and an output current detection circuit part including a monitor transistor for detecting electric current flowing in the driver transistor, the voltage regulator comprising:

a plurality of transistors provided in the
25 monitor transistor and connected in parallel;

wherein the plural transistors are disposed within an area of the semiconductor chip on which the driver transistor is mounted.

5 7. The voltage regulator as claimed in claim 5, wherein the plural transistors are disposed on the semiconductor chip at equal intervals.

8. The voltage regulator as claimed in claim 5,
10 wherein the output current detection circuit part is configured to change the electric current flowing in the monitor transistor into electric voltage and output the electric voltage.

9. The voltage regulator as claimed in claim 5,
15 wherein the constant voltage circuit part further includes a reference voltage generation circuit for generating and outputting a reference voltage and an operational amplifier circuit including a differential pair for controlling the operation of the driver transistor, wherein the output current
20 detection circuit part is configured to supply an electric current to the differential pair of the operational amplifier circuit, wherein the electric current supplied to the differential pair is proportional to the electric current flowing in the monitor transistor.

10. The voltage regulator as claimed in claim 5, wherein the driver transistor and the monitor transistor are MOS transistors.

5 11. The voltage regulator as claimed in claim 5, wherein the constant voltage circuit part and the output current detection circuit part are integrated on a single integrated circuit.